

MISSOURI CONSERVATIONIST

VOLUME 83, ISSUE 11, NOVEMBER 2022
SERVING NATURE & YOU



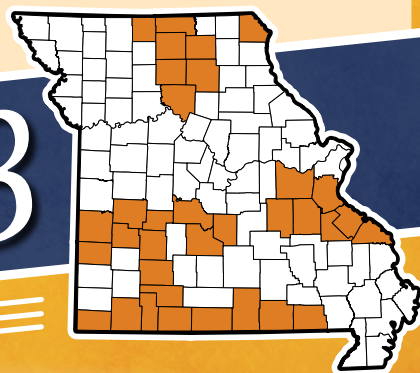
HUNTERS, HELP US!



MANDATORY CWD SAMPLING OF DEER OPENING FIREARMS WEEKEND IN 34 COUNTIES

Bring your deer
to a sampling
station near you.

The 34 mandatory CWD sampling counties are:
Adair, Barry, Barton, Camden, Cedar, Chariton, Christian, Clark,
Crawford, Franklin, Greene, Hickory, Howell, Jefferson, Laclede,
Linn, Macon, McDonald, Mercer, Oregon, Ozark, Perry, Polk,
Pulaski, Putnam, Ripley, St. Clair, St. Francois, Ste. Genevieve,
Stone, Sullivan, Taney,
Vernon, and Washington.



NOVEMBER 12-13



Get information on chronic wasting disease and sampling locations at mdc.mo.gov/CWD,
or in the *2022 Fall Deer & Turkey Hunting Regulations and Information* booklet
available where permits are sold or online at short.mdc.mo.gov/ZvC.

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Milkweed
seedpod



MISSOURI CONSERVATIONIST



ON THE COVER

Bowie, a black lab, retrieves
a drake mallard during a
foggy hunt at Duck Creek
Conservation Area

DAVID STONNER

16-35mm lens, f/5.6
1/100 sec, ISO 400

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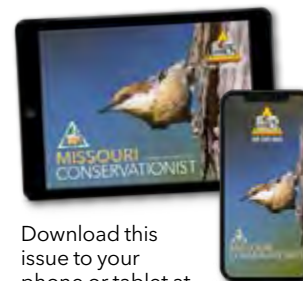
PHOTOGRAPHERS

Noppadol Paothong, David Stonner

CIRCULATION MANAGER

Laura Scheuler

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Letters to the Editor

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PO BOX 180
JEFFERSON CITY, MO 65102



FISHING MEMORIES

Autumn Angling Adventures Await can be seen in the October issue, starting on Page 11.

NOSTALGIA AND INSPIRATION

I grew up in Missouri and the two things I loved most as a child were being outside and reading. We only subscribed to two publications at home — *Reader's Digest* and the *Missouri Conservationist*, and I read both from cover to cover, every issue, from the time I learned to read, until I left home.

I moved to Georgia in my early 20s and haven't thought about the *Conservationist* in years (maybe decades), until this morning. I won't bore you with the mental path that led me to it, but as soon as I got to my desk, I looked it up online, fully expecting to find that it hadn't been published in years. I was so happy to see it's still alive and well! Not only as a reader, but also as a magazine publisher myself, it gives me a boost to see other publications thriving. If others can survive, so can mine.

I flipped through your September issue and then flipped through it again — what a great magazine! It not only reminded me of growing up in Missouri and the happier moments of my childhood, but it also gave me ideas for content for my own magazine.

Amy Thurman Georgia

RELIVING FISHING MEMORIES

As a 90-year-old former angler, I loved your article about fall fishing in Missouri (*Autumn Angling Adventures Await*, October, Page 11). It was the

next best thing to actually being there. Not being able to fish in the fall in Missouri (especially on Table Rock Lake) is one of the few things I really miss because of my lack of mobility. Keep up your good work!

Marv Fremerman Springfield

PLACES TO GO

For years I have collected the *Places to Go* section of the *Missouri Conservationist* in a binder for further reference when I am planning a trip somewhere in Missouri. We are so blessed by the unbelievable number of opportunities to experience natural areas of all types in our amazing state, and *Places to Go* provides enough information to help me know where these places are and what to expect.

Suzanne Rush Farley

THE CONSERVATIONIST TRAVELS

When I visit my in-laws in their retirement village in South Africa, I usually take a stack of magazines to read including my *Missouri Conservationist*. When I'm finished with them, I leave them in the library for others to enjoy.

On our most recent visit, a lady sought me out to tell me how much she enjoyed the *Missouri Conservationist* magazines I left there last December and how lucky we are to have such a high-quality magazine offered to us. I will make sure to save up all my old copies to take there on my next trip, too.

Diana Griffiths via email

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Conservation Headquarters

573-751-4115
PO Box 180
Jefferson City, MO
65102-0180

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Southeast/Cape Girardeau: 573-290-5730
Central/Columbia: 573-815-7900
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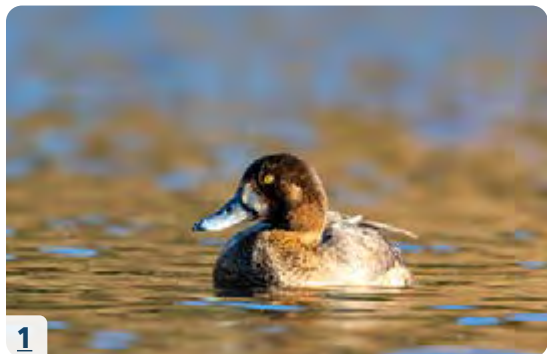
Barry
Orscheln

The Missouri Department of Conservation protects and manages the fish, forest, and wildlife of the state. We facilitate and provide opportunity for all citizens to use, enjoy, and learn about these resources.



Want to see your photos in the Missouri Conservationist?

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or email Readerphoto@mdc.mo.gov.

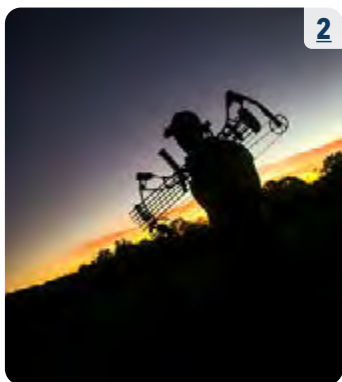


1

1 | Female scaup
by **Angelique
McVey**, via Flickr

2 | Archery
hunter by **Wilson
Reyes**, via email

3 | Muskrat by
Brad Wilson,
via Flickr



2



3



Want another chance to see your photos in the magazine?

➔ In the December issue, we plan to feature even more great reader photos. Use the submission methods above to send us your best year-round pictures of native Missouri wildlife, flora, natural scenery, and friends and family engaged in outdoor activities. Please include where the photo was taken and what it depicts.



Up Front

with Sara Parker Pauley

✳️ My family still tells stories about old “Jinx,” the ornery yet amazing English Setter we had when I was a child. When Jinx would grow impatient awaiting his next outing, he would jump the fence and take a few laps around the neighborhood. My dad would get in our station wagon and race to apprehend the escapee before our neighbor could call the dog catcher. Dad swears that if he honked once, Jinx would turn left; twice, he’d take a right. When Jinx was ready, he would come to a stop and jump in the old Ford Country Squire.

But these unsanctioned runs were just to bide time until he could do what he loved most — quail hunt. Once, Jinx ran so far and wide looking for coveys that he toppled over in sheer exhaustion. After a good rest, he was ready to go again. When Jinx grew older my grandfather took him in as a housemate and companion. My grandfather swore that sometimes when they were both sitting in front of the TV, he would raise his hand in greeting, and Jinx would raise his paw in return.

Jinx was legendary in our family, as all good hunting dogs are in theirs (meet four such families in David Stonner’s fantastic photo essay on Page 16). Life would be different without our hunting dogs. The house may be cleaner and the neighborhood quieter — indeed, life would be simpler. I’ll take the dogs.

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
SARA.PAULEY@MDC.MO.GOV

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Nature LAB

by Dianne Van Dien

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

FISHERIES SCIENCE

Longnose Darter Study

✳ DNA sequencing can reveal things that otherwise might go unnoticed — such as genetic variation within a species from one Ozark watershed to another. Recently, MDC and university researchers have been looking at genetic differences among populations of longnose darters across several states.

“The federal government was looking at listing the longnose darter as endangered,” explains MDC Geneticist and Biometrician Leah Berkman. “But the St. Francis population — the only existing population in Missouri — had not been studied. To know if it should be lumped in with the other longnose darters, we need to know how related they are.”

From 2017 to 2019, researchers collected tiny clippings from the tails of 35 longnose darters in the St. Francis River. DNA from these samples was compared to that of longnose darters from Oklahoma and Arkansas and to that of a similar species, the slenderhead darter.

“The process is pretty simple,” says Berkman. “The fish have many sequences in common, so these can be aligned to each other with a computer algorithm and then we look for places where they mismatch.



Longnose darters are one of several darter species that are a species of conservation concern in Missouri. Growing 2-4 inches in length, these small, quick fish usually evade typical survey methods, such as seine nets and trawling. Instead, researchers survey and capture them by snorkeling.

Scientists use DNA testing to determine genetic diversity of Ozark species

Then those differences in DNA sequences are used to draw the family tree.”

This time the family tree provided “a big reveal,” Berkman says. “The longnose darters in the St. Francis River are different enough to be a separate species from those found in the Neosho and Arkansas rivers.”

What does this mean for conservation? The St. Francis River longnose darters could be declared a separate species and receive a new name. But regardless of the outcome, these darters contribute diversity to the larger group of closely related darters, and MDC will be safeguarding their unique genetics by protecting their habitat and preventing the introduction of other longnose darters into that region.

Longnose Darter Study at a Glance

DNA sequencing is helping scientists unravel the genetic relationships among darter species in the Ozarks, where areas isolated many years ago caused species to develop unique genetics and evolve. Recent analyses show that the longnose darters in Missouri’s St. Francis River are very genetically different from other longnose darters.

Cooperating Universities

University of Missouri, Tennessee Tech University, Yale University



Longnose darter
(*Percina nasuta*)
St. Francis River, MO



Slenderhead darter
(*Percina phoxocephala*)
Spring River, MO



Longnose darter
(*Percina nasuta*)
Little Red River, AR

Longnose darters and slenderhead darters are part of a large group of closely related species, known as a species complex.

JACOB WESTHOFF

In Brief

News and updates from MDC



Funding from the Pittman-Robertson Act continues to be essential for MDC habitat management, wildlife research, and the restoration of numerous native species, such as elk shown here at Peck Ranch Conservation Area.

MDC AND THE PITTMAN-ROBERTSON ACT

SERVING NATURE AND YOU FOR 85 YEARS

➔ This year marks the 85th anniversary of conservation history being made both in Missouri and across the nation.

In Missouri in 1937, our work began when citizen-led efforts created MDC and the Missouri Conservation Commission. The non-political,

science-focused state conservation agency was a new and unique concept for the time. Our beginnings 85 years ago came at a time when Missouri's fisheries, forests, and wildlife populations were largely decimated from the commercial overharvest of these resources and support for conservation was often tied to political interests.

In Washington in 1937, President Franklin D. Roosevelt signed into law The Federal Aid in Wildlife Restoration Act, popularly known as the Pittman-Robertson Act (PRA). Sponsored by Senator Key Pittman of Nevada and Congressman A. Willis Robertson of Virginia, the first-of-its-kind legislation provided federal funds through grants to states for wildlife restoration, wildlife habitat, and wildlife management research.

The PRA established a manufacturers' excise tax on guns, ammunition, and archery equipment. The taxes are collected from manufacturers and then distributed annually as grants to states and territorial areas by the Department of the Interior's U.S. Fish and Wildlife Service. States typically must provide an investment of one dollar for every three dollars in federal funding that is granted. In most cases, state hunting and fishing license fees are used to meet this matching requirement.

continued on Page 6 »

MDC, PITTMAN-ROBERTSON ACT

(continued from Page 5)

The PRA has been amended over the decades to also include funding for hunter education programs, for the development and operation of public shooting ranges, and for "recruitment, retention, and reactivation" to boost the numbers of hunters, trappers, and recreational shooters.

"Federal reimbursement monies from the Pittman-Robertson Act have been and continue to be an essential source of funding for MDC," said MDC Director Sara Parker Pauley. "Without those funds over the past 85 years, we would not have been able to restore deer and turkey populations around the state, bring back once-native elk to the Ozarks, fund our hunter education program and dozens of shooting ranges around the state, or do much of the extensive wildlife habitat restoration and wildlife research done by MDC staff."

Pauley added that over the decades and into today, the PRA has provided funding for MDC to establish and manage more than 1 million acres of wildlife habitat around the state, including more than 1,000 conservation areas and natural areas along with river accesses and nature centers.

In Missouri, the PRA also helps fund MDC's five staffed and 70 unstaffed shooting ranges around the state.

Funds from the PRA also provide hunter education training and certification to thousands of Missouri hunters each year. Over its 85-year history, MDC has provided hunter education training and certification to about 1.4 million Missourians.

The PRA also continues to be essential in providing MDC funding for key habitat management, conservation research, and wildlife restoration for numerous wildlife species, including white-tailed deer, wild turkey, quail, waterfowl, elk, and others.

Federal reimbursements, such as from the PRA, account for about 14 percent of MDC's annual revenue. Other principal sources of MDC revenue come from the sale of hunting and fishing permits, the dedicated conservation sales tax of one-eighth of one percent, and revenue from the administration of forest, fish, and wildlife resources.

For more information on the Pittman-Robertson Act, visit the U.S. Fish and Wildlife Service online at short.mdc.mo.gov/4cn.

For more information on how we spend our revenue on taking care of nature, connecting people with nature, and maintaining public trust, read the latest MDC *Annual Review* in the January 2022 issue of the *Missouri Conservationist* online at short.mdc.mo.gov/4ch.

Ask MDC

Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
or call 573-522-4115, ext. 3848.

Q: What is this species of bird?

➔ The light-blue plumage of this bird indicates it's a nonbreeding male indigo bunting. When breeding, the upperparts of an adult male are turquoise blue when seen in sunlight; otherwise, they appear dark blue.

These birds forage for insects, berries, and seeds, such as the seeds on this sorghum stalk. Plants in the aster family — such as thistles, goldenrods, and dandelions — also provide many of the small seeds indigo buntings like to eat. Hedgerows and woodland edges are common habitats for this species, and they are often seen flying up from gravel roads and walking trails. Indigo buntings migrate from where they overwinter in the tropics to breed here during summer months. For more information about this species, visit short.mdc.mo.gov/4p3.



Were they all caught? We expected trout to bulk up for winter. The day's lack of action surprised us. I'm curious if an expert might solve this puzzle?

➔ The Meramec Red Ribbon Trout Area's trout population is managed through stockings. Little to no natural reproduction occurs. Brown trout are typically stocked several times in the fall and winter; the most recent stocking was in January.

With changes in weather patterns, the water temperatures in this section of the Meramec can get too warm to support trout during periods of high summer runoff, and the number of trout surviving after stocking have been suffering for several years.

Rainbow trout in the Red Ribbon Area are escapees from the Meramec Spring Branch, and their numbers are lower as well. MDC sampled this section in 2021 and found high numbers of native species like

Q: Last fall, we were fishing the Red Ribbon Area of Meramec River and only saw minnows. It was a warm, clear day and we could see the bottom of the deep holes. We are all experienced fishermen, and so it is unlikely we simply missed them. Would the trout migrate elsewhere?

smallmouth bass and suckers, but relatively low numbers of rainbow and brown trout. Our population estimates were 20 brown trout per mile and 70 rainbow trout per mile. Although they are present, these are relatively low populations compared to past decades.

Fall can be a good time to be on the river, but the clear water can make for wary fish. The brown trout are also attempting to spawn this time of year, which might make them less interested in feeding. Some anglers have reported good fishing experiences during murkier water conditions in the spring, which might be something to consider. Recent telemetry studies indicate several fates after stocking. Some do survive; however, others are consumed by natural predators, harvested by anglers, die in flood events, perish in warm water, or can't make the switch from captivity to surviving in the wild.

The area will be stocked with brown trout as soon as schedules allow this fall, and then one to three times more before March.



Q: Do you know what might have caused the green-dyed coloration in this decaying piece of wood?

➔ This could be the mycelium of a type of fungus called *Chlorociboria*. It likes to grow on dead or decaying logs of both hardwoods and conifers. Although the little bluish-green cup fungi are not often seen, the green-stained wood is prized by woodworkers, including craftsmen of the Italian Renaissance who used it to fashion beautiful inlays. For more information, visit short.mdc.mo.gov/4pU.



Haeley Eichler

PETTIS COUNTY
CONSERVATION AGENT

offers this month's

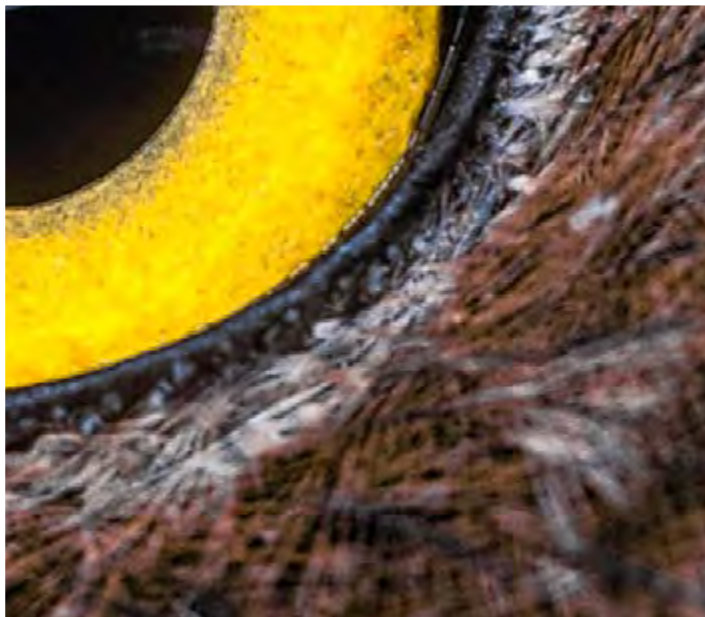
AGENT ADVICE

As you prepare for the 2022 firearms deer season, add permits to your checklist. With so many convenient ways to purchase permits today — online, the MO Hunting app, retail shops — it's easy to wait until the last minute, but that's not advisable. Plan ahead and buy early. Pack your hunter orange. It's an important safety measure, and it's a requirement. Your hat and vest, coat, or shirt must be visible from 360 degrees, and camouflage orange doesn't fulfill the requirement. Finally, hunters 15 or younger as of Sept. 15 are exempt from the antler point restriction this season. For more information, visit the *2022 Fall Deer & Turkey Hunting Regulations and Information* booklet at short.mdc.mo.gov/ZVo.

What IS it?

Can you
guess this
month's
natural
wonder?

*The answer is on
Page 9.*



WE ARE CONSERVATION

Spotlight on
people and partners

by Angie Daly Morfeld



Jonathan Beard

➔ Jonathan Beard's interest in caves started with the challenge of photographing them. "Without sunshine, you have to work to get the best angle and effect."

Making caves beautiful again

By 1983, Beard had joined a caving club in Springfield and his interests turned to cave restoration. Beard's efforts include clearing trash, removing graffiti, restoring cave floors, and rejoining broken stalagmites and stalactites (to date, he has rejoined 1,500).

Cave restoration not only makes caves beautiful again but also removes toxins from the cave

ecosystems. One empty can is capable of attracting and trapping dozens of camel crickets and other cave fauna. Spray paint on cave walls covers the natural patina that may be home to microfauna. Old paint chips that fall may be toxic to fauna searching for food.

In his own words

"There is a cave creed: Take nothing but pictures. Leave nothing but footprints. Kill nothing but time."

by Cliff White

What's **your** conservation superpower?



Serving nature and you®

HONOR MISSOURI CONSERVATIONISTS WITH MDC AWARDS

We are seeking nominations of Missourians who make or have made outstanding contributions to conservation in Missouri for the Master Conservationist award and Missouri Conservation Hall of Fame award. The deadline for nominations is Dec. 31.

The Master Conservationist award honors living or deceased Missourians while the Missouri Conservation Hall of Fame award recognizes deceased individuals.

Get more information, criteria, and nomination forms for each award from the MDC website at short.mdc.mo.gov/Zyp and short.mdc.mo.gov/ZyG.

VETERANS DAY

In honor of Veterans Day, MDC offices will be closed for all business, including permit sales, on Friday, Nov. 11. You can still buy Missouri hunting and fishing permits on that day from numerous vendors around the state, online at mdc.mo.gov/permits, or through MDC's free mobile apps, MO Hunting and MO Fishing, available for download through Google Play or the App Store.



WHAT IS IT? GREAT HORNED OWL

The great horned owl has large yellow eyes set against a reddish-brown or gray face. Its wide-set ear tufts come to a point that resemble horns, which gives this large owl its name. After dark, you can identify it by its three to eight deep hoots grouped in a pattern, such as *hoo h'HOO, HOO, HOO*.



GREAT HORNED OWL: JIM RATHERT



The Shortleaf Pine in Missouri

RESTORING A FORMER FOUNDATION OF THE OZARK FOREST

by Dan Dey



Shortleaf pines
abound at Mark Twain
National Forest.

PHOTOGRAPH BY
NOPPADOL PAOTHONG

ALONE SHORLEAF PINE STANDS NEARLY 100 FEET tall, rooted in the stony soils of a cliff, overlooking a valley. Protected by its thick bark, the pine has survived a long history of frequent fires set by Osage Indians and Scotch-Irish immigrants. It escaped the woodsman's axe by its remote location. Over its 350 years of life, it has seen dramatic changes from the days when the Osage people plied the waters of the river below in their canoes. It stood through the agricultural and industrial revolutions that swept through the Missouri Ozarks in the later 19th and early 20th centuries. Today, it stands witness to the tourists who drift upon this Ozark spring-fed stream in their canoes, kayaks, and tubes.

Missouri's Native Pine

Shortleaf pine is the most widely distributed of the southern pines (loblolly, longleaf, and slash pines) and is the only native pine species in Missouri. It has significant ecological and economic value and has played a major role in the history of Missouri. Shortleaf pine was a dominant tree species in savanna, woodland, and forest natural communities that once blanketed the Ozark landscape.

Pine-oak woodlands once covered an estimated 65 percent of the Ozark landscape, where they mingled with prairies, savannas, and forests. Once prominent savannas and woodlands are now some of the rarest natural communities in the Ozarks, but increasing efforts are being made by public agencies, conservation organizations, and private landowners to restore them with harvesting and prescribed fire.

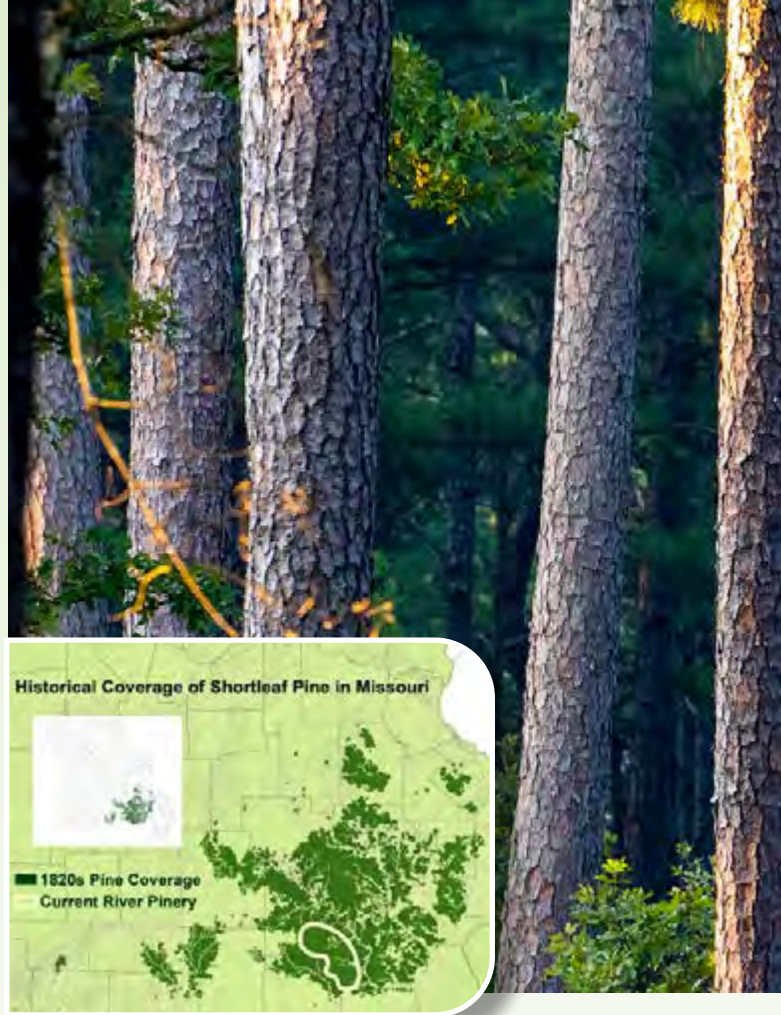
Pine-Oak Habitats and Diversity

Pine-oak savannas and woodlands produce high levels of plant diversity that, in turn, support a diversity and abundance of fauna. Several wildlife species require mature, large pine as part of their habitat, while many others prosper in more open savanna and woodland habitats.

The endangered red-cockaded woodpecker and brown-headed nuthatch have been lost from Missouri for at least 100 years due to loss of open mature pine habitat. Other pine obligates, such as Bachman's sparrow and pine warbler, are in decline. However, large scale restoration of pine woodlands on federal and state lands in Missouri over the past 20 years has made the restoration of the brown-headed nuthatch to the Ozarks possible.

Pine woodlands and savannas also provide quality habitat for important game species such as bobwhite quail, white-tailed deer, and eastern wild turkey. Elk once roamed the pine-oak woodlands of the Ozarks in the early 1800s but were hunted to extinction by the end of the century. Today, a viable elk herd has been returned to restored pine-oak woodlands on MDC's Peck Ranch Conservation Area.

Shortleaf pine once covered 6.6 million acres in the Missouri Ozarks (inset map). It occurred sometimes in dense pure stands of pine, but more often intermixed with oaks and other hardwoods in forests, woodlands, and savannas.



Quality Wood Leads to Overharvest

Shortleaf pine produces quality lumber and veneer, and it is also used for plywood, utility poles, fence posts, pilings, and pulp. It was the focal species desired by lumber barons and speculators, which led to the widespread exploitation of Missouri's Ozark forests from 1880 to 1920, dramatically transforming the Ozark landscape in ways never seen before. The Grandin Mill in Carter County was once the largest sawmill in Missouri and possibly the entire U.S. It consumed 70 acres of forest per day. In 1899, about 180,000 acres of pine forests were harvested to feed the large mills located in towns like Winona, Bunker, West Eminence, Greenville, Leeper, Birch Tree, and Grandin. The Grandin Mill may have been responsible for the liquidation of over 500,000 acres of pine forests over its 30-plus year history.

Today, 4 to 7 percent of the timber harvested in Missouri is shortleaf pine. There is substantial potential to increase the contribution of pine in the forest products industries and diversify the Ozark economy because 13 to 62 percent of the annual pine growth is harvested in any year in existing pine-oak forests. Increased efforts to restore pine-oak woodlands and forests would add to the pine timber supply.

In 1946, a statewide survey revealed that there were originally about 6.6 million acres of shortleaf pine-oak forests in Missouri. Today, there remains a mere 552,000 acres. This dramatic loss of pine in Missouri is due to novel changes in land use brought on by European immigration into the Ozarks. Throughout the 19th century, European settlers frequently



burned the Ozarks every one to three years, too frequent for the survival of young pine regeneration and more frequent than their Native American predecessors. During the initial logging boom (1880–1920), mature pine trees were cut wherever a sawyer could get to them with horse, mule, oxen, wagon, or tramway. Shortleaf pine supplied the demand for construction timber and other forest products for booming populations in eastern cities. The loss of mature pine eliminated seed for natural regeneration. Removal of pine from large areas made natural regeneration impossible because pine seed can only disperse about 150 feet from a mother tree. After the logging, intense fires burned through the logging slash and annual fires were set by the locals to promote grass production for their open range grazing operations. Although shortleaf pine seedlings that are several years old can sprout after fire kills their shoots, these fires burned too frequently for young, small pine seedlings to survive. The oaks, however, are tenacious sprouters under frequent fire in open forests and can persist and grow large root systems.

Once fires were suppressed in the Ozarks in the 1930s to 1950s, oak sprouts bolted to dominance, suppressing any smaller pines that remained. In the absence of fire, leaf litter accumulated, which inhibited pine seed germination and seedling establishment. Over the past 70 years, our oak-dominated forests have been maturing to form dense closed canopies that cause low light levels in the understory where the shade intolerant shortleaf pine seedlings are unable to survive.

The Missouri Lumber and Mining Company established operations about 1888 in Missouri to harvest the shortleaf pine. Their Grandin Mill was one of the largest in the country at the beginning of the 20th century. It closed about 1910.



Shortleaf pine-oak woodlands are being restored today using a combination of timber harvesting and prescribed fire.

Pines Preferred Conditions

Shortleaf pine is most tolerant of certain site conditions in the Ozarks. There they are more competitive and productive compared to hardwood species. The presence of pines is strongly related to soils derived from the Roubidoux formation, comprised of sandstone, dolomite, and chert that surfaces in the central and southeastern Ozarks. These sandy, rocky soils occur commonly on upper slope positions. They are dry with low water holding capacity. They are low in base saturation, acidic, and otherwise low in fertility.

A long history of fires set by humans has promoted the spread and dominance of shortleaf pine on other, more productive site types. For example, fires set by Osage Indians and other Native Americans burned on average every 10 years with variability in fire-free periods of two to 45 years from site to site during the 18th and early 19th centuries. With the removal of fire from the Ozark landscape, pine has retreated to its stronghold on the Roubidoux formation.

Fired Up for Pines

Fire is essential to the success and history of shortleaf pine in Missouri. Recurring fire, every three to five years, keeps leaf litter from building up, and provides a good environment for pine seed to contact soil, germinate, and develop into seedlings. New seedlings less than 3 years old are susceptible to fire and have high mortality if burned. During this stage of development, the pine seedlings develop a double “crook” where the roots and stem join. The crook is an area with an abundance of dormant buds that lie along or in the soil surface where they are better protected from the heat of surface fires. Should fire kill the shoot of an older pine seedling, it is able to sprout from the dormant buds and continue growing. If light is adequate, as it is in the understory of savannas and open woodlands, then pine seedling sprouts can persist over multiple fires, growing and waiting for a time when they can recruit into the overstory. In restoring pine-oak savannas and woodlands, overstories are often too dense and timber harvesting is used to thin the overstory in addition to prescribed burning.

Pine reproduction requires a fire-free period of about eight to 15 years to grow large enough in size (for example: greater than 0.5 inches diameter at breast height, greater than 5 feet tall) so that it can better resist shoot mortality from fire, and thus, continue growing into the overstory even if there were to be another fire. If pine reproduction can maintain dominance over its competition in the early years, it can grow more rapidly than hardwoods into the overstory. Additional fires during the early stages of pine recruitment into the overstory may be useful for controlling hardwood sprout competition to keep pine free to grow.



The double crook of a shortleaf pine seedling develops in the first few years of life (left). When fire burns the seedling, killing any stems above ground, new sprouts emerge from the crook (above).

Restoring Pines

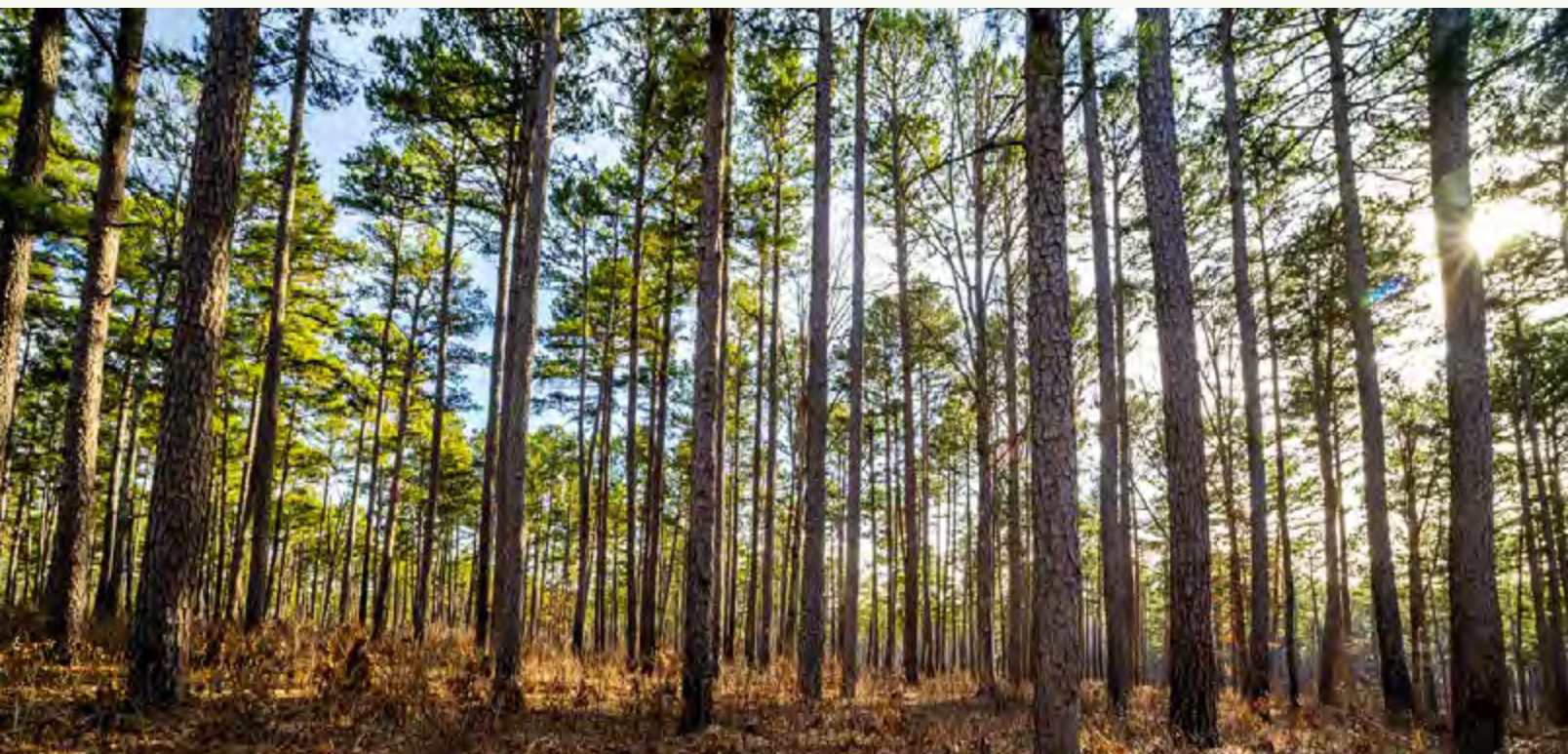
Shortleaf pine savanna, woodland, and forest restoration is increasingly important for Missouri land managers and owners. Restoration of these once prominent natural communities would reverse the decades-long decline that continues today. Pine ecosystems have high biological diversity, and their restoration is key to native flora and fauna conservation. Pine ecosystems provide key habitat for endangered and declining populations of species of conservation concern, including plants, wildlife, and pollinators. They provide quality habitat for many of our valued game species such as deer, turkey, and quail. Shortleaf pine is highly adapted and compatible with future expected climates, which increases the resilience of our forests to respond well to future environmental threats and stresses. Shortleaf pine woodlands and forests provide valuable forest products and there is potential to diversify and grow our Ozark industries and economy. Shortleaf pine adds to the aesthetic and recreational values of our Ozark landscape. For more information on managing for shortleaf pine on your property, contact your local forester.

There is a shortleaf pine natural history and restoration management driving tour and podcast in the Current River Pinery, Mark Twain National Forest. For more information, visit short.mdc.mo.gov/4q7. ▲

Dan Dey is a research forester with the U.S. Forest Service's Northern Research Station. Nature is therapy for Dan, inspiring his poetry, painting, and photography. He enjoys time spent in nature most with his wife, Mavis, his six children, and 16 grandchildren.



From about 1880 to 1920, much of the shortleaf pine was cut from the Missouri Ozarks. When the forests were cutover, the pine resource was greatly diminished and unable to regenerate under European settler land use practices of frequent fire and open range grazing.



Flush, Retrieve, Tree, Repeat

THESE HUNTERS AND DOGS
TEAM UP FOR SUCCESSFUL
HARVESTS

by David Stonner

“It’s not really important that Tip was a good dog to hunt over, but it is important to me that she was a good dog to be with. She was my pal. We enjoyed being with each other. I don’t know that you can ask for much more.” —*Gene Hill, nature writer*

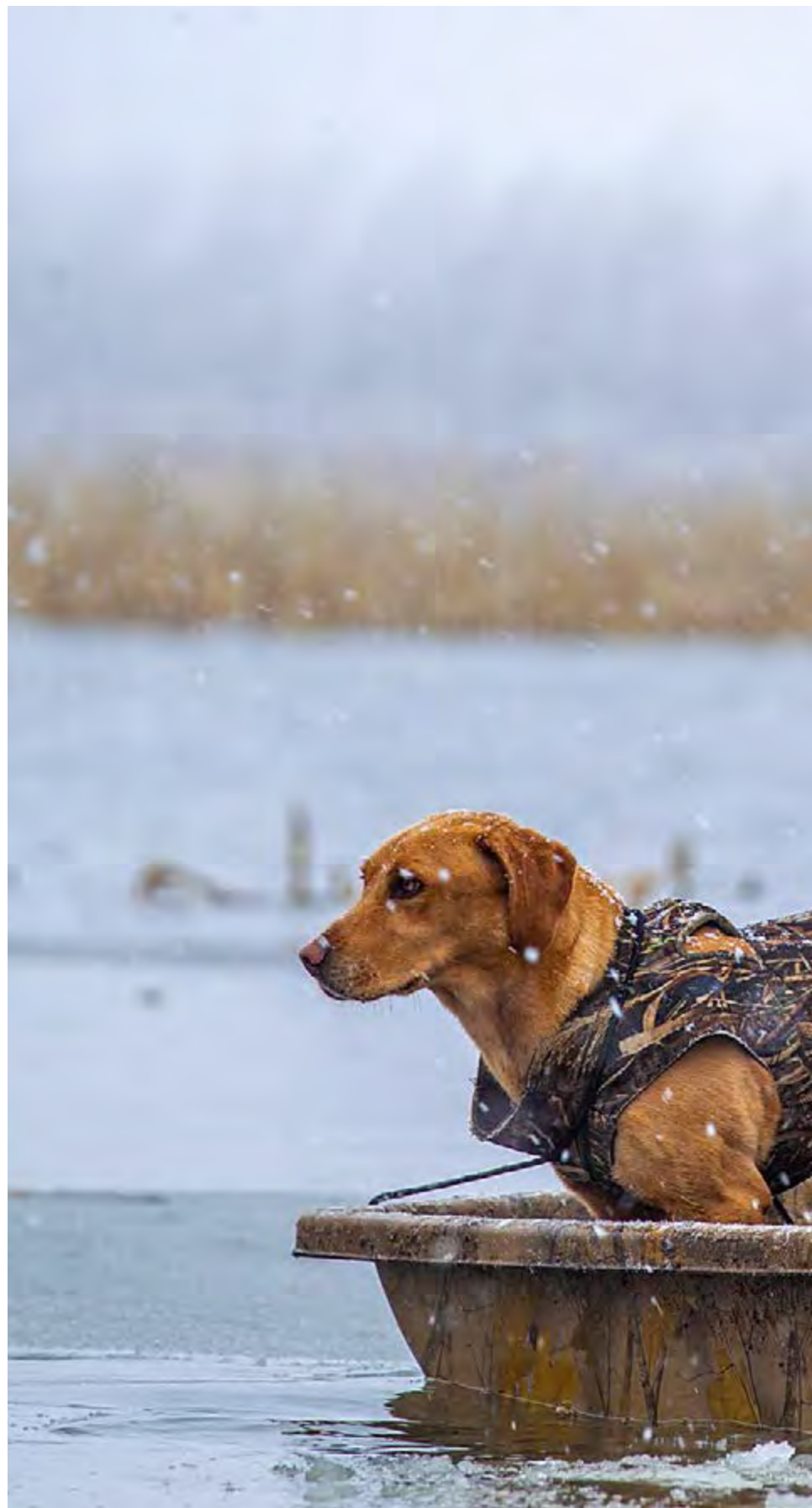
Traditionally, a hunting dog is defined as a canine that hunts with or for hunters. Dogs groomed for hunting are usually narrowed to hounds, terriers, dachshunds, cur-type dogs, and gun dogs. There are several different types of hunting dog developed for various tasks and purposes, and further distinctions can be made, based upon the dog’s skills and capabilities.

The hunters you’ll meet in these next few pages might balk at that traditional definition of hunting dogs in favor of author Gene Hill’s thoughts on the subject.

Their dogs are much more than hunters. They are family members, just as likely to be found curled up in the house, next to a fire or on a warm bed at night as running afield. They are hunting buddies, eager to join the next adventure, whether it be flushing a bird on a crisp fall day or diving into frigid water after downed waterfowl, without complaint. They are companions in the truest sense of the word, as happy hunting as lounging on the couch.

And pedigrees? Not necessary, according to at least one of these hunters. You don’t need a fancy bloodline to tree a squirrel, for example. All you need is speed and a strong nose to get the job done.

These hunters have flipped the traditional thoughts of hunting dogs on its ear. For them, gone are the days of keeping a working or hunting dog separate from their in-home pet. These hunters are enjoying their hunting dogs on and off the field, and these dogs are loving every minute of it.



Brian Bernskoetter keeps his yellow Labrador retriever, Chief, warm and dry for as long as possible while breaking sheet ice amidst falling sleet and snow on a New Year's Day hunt at Grand Pass Conservation Area.

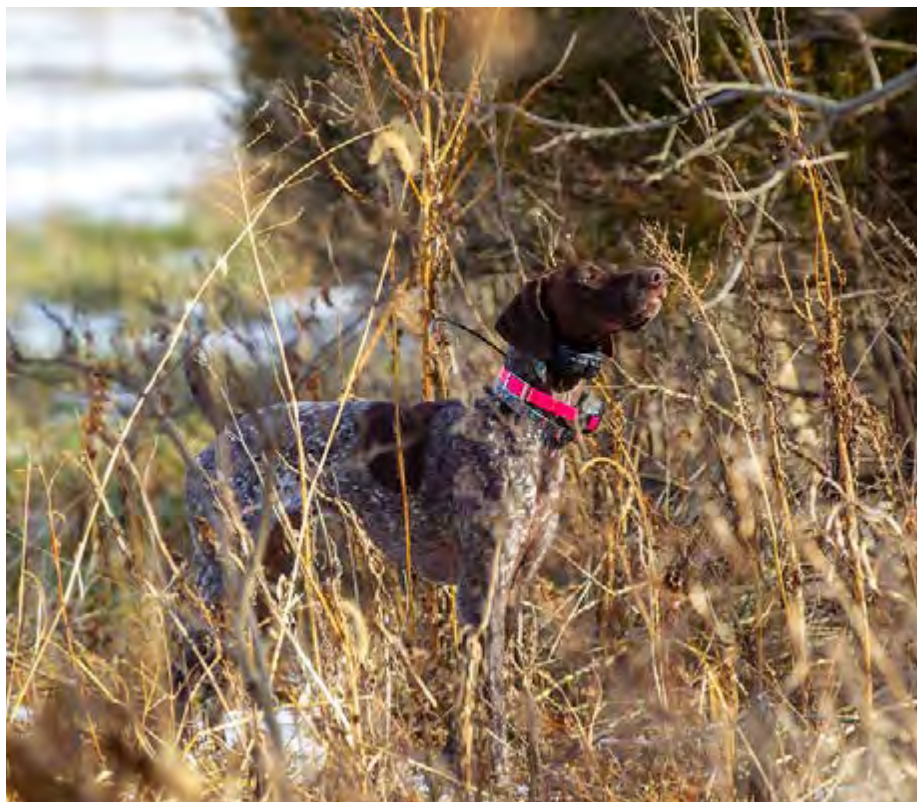


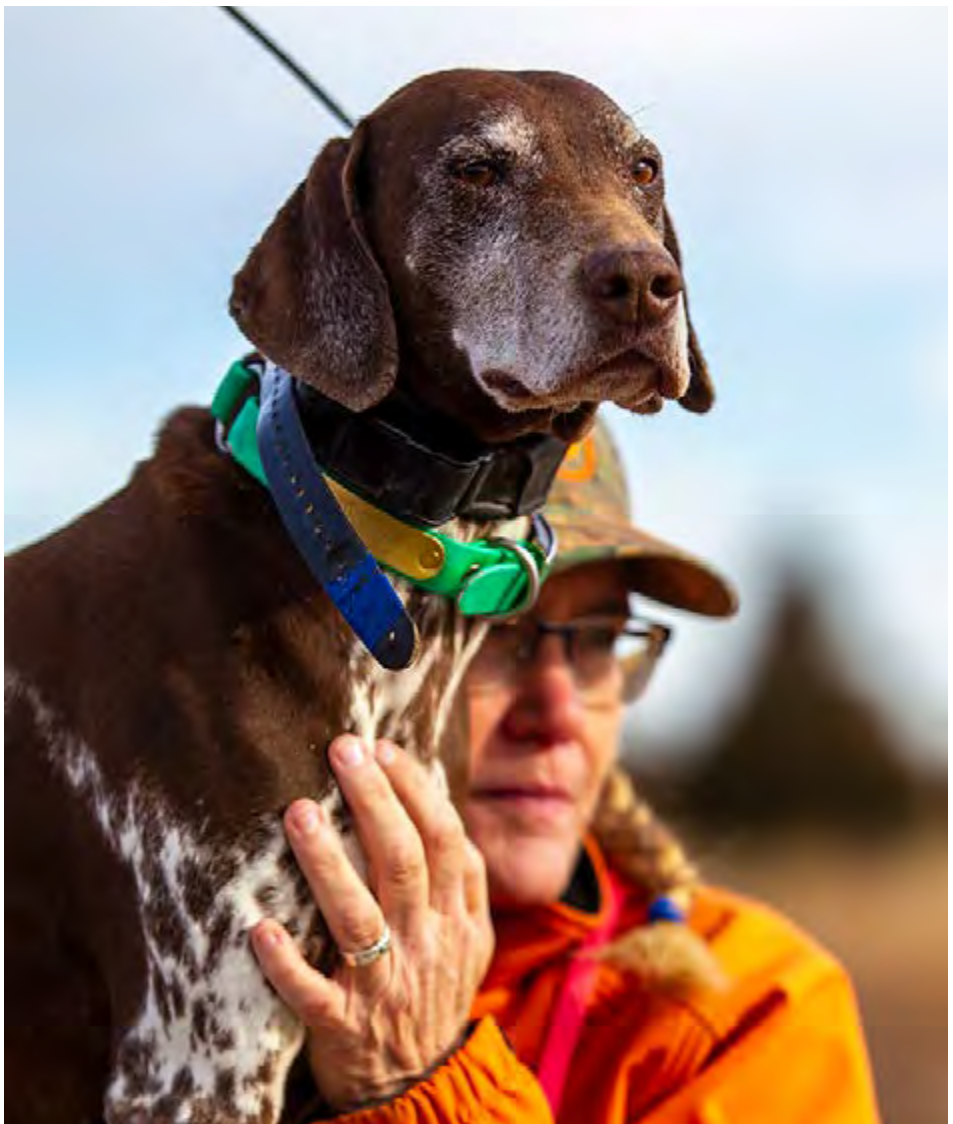
Chief keeps his eyes on the sky, shaking with anticipation while Brian calls to mallards seeking shelter from the winter storm. Chief eagerly leaps into the frigid water, crashing through ice and frozen corn stubble to retrieve the downed birds with a soft mouth and polite release to Brian's waiting hand.





Time spent
afield with
a good dog
warms the heart
and brings a
smile in even
the most
bitter weather.





Elsa Gallagher (hat) and her sister Jessica Hann (visor) ply the uplands near Gallatin, Mo., for quail on their annual "Sisters Hunt" with German shorthaired pointers Nova, Ginny, Charlie, Huck, and a vizsla named Patch. Nova (showing off a quail above) and Ginny (snuggling with Elsa) are sisters themselves.



CHILD HUGGING DOG: MATT SMITH



Matt Smith, daughter, Sophia, and dog, Lucy, hunt for squirrels at Apple Creek Conservation Area in southeast Missouri. The Catahoula/chocolate Labrador mix was free from a Craigslist ad and has proven to be a wonderful family dog. Lucy constantly keeps watch over Sophia and is a tenacious hunter with her eyes, ears, and nose locked on treetops for squirrels.





Black Labrador Bowie retrieves a mallard drake in the waning light of a long day in the field.

Gary Campbell and Bowie spent several days with friends hunting the fog-shrouded flooded timber holes at Duck Creek Conservation Area in southeast Missouri.





The close bond between Bowie and Gary has been even tighter after the dog nearly lost an eye to an embedded smartweed seed during an early season teal hunt. Bowie recovered and was retrieving with gusto during their days in the southeast swamps and timber.

Get Outside

in NOVEMBER



Bush honeysuckle

Ways to connect with nature

Give Your Rake a Break

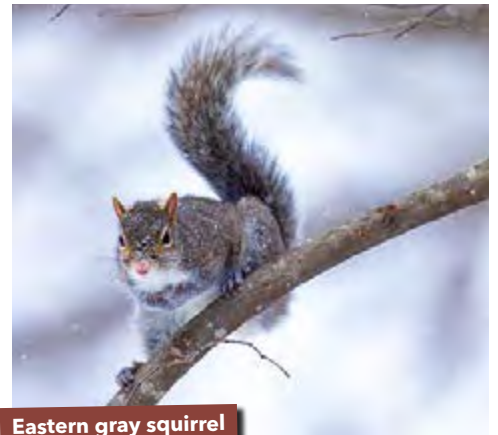
Did you know deciduous trees absorb their leaves' nutrients before shedding them each fall? This is key to their survival and economical for the tree – similar to a human using up the food in their refrigerator before it expires. Rest assured, those fallen leaves don't go to waste. Fallen leaves:

- Nourish the soil.
- Create a mulch layer that helps rain and snow soak into the ground.
- Provide refuge and food for backyard wildlife, including insects, birds, butterflies, and other pollinators.

For these reasons, it's best to drop that rake, and let those leaves fall where they may.



White-tailed deer



Eastern gray squirrel

Time to Get the Winter Coat

As the winter temperatures set in, we, as humans, pull out our winter coats. Mammals in the wild are not much different. Take a look at the eastern gray squirrel. In winter, the squirrel's fur becomes longer and more silvery gray and the ears have a noticeable projecting fringe of white fur.

Similarly, in white-tailed deer, the color pattern of the winter coat is grayish to grayish brown — not reddish brown to tan — and this is often called the blue coat. The hairs of the back are blacker tipped, giving a darker appearance to the back, but the black chin patch is less sharply defined. The hairs of this coat are long and heavy; each hair has many air spaces that act as insulators, helping to insure warmth during cold weather. The coat easily repels cold rain and wet snow in winter.

Natural Events to See This Month

Here's what's going on in the natural world.



Eastern witch-hazel flowers.



Oyster mushrooms fruit year-round.



Voles and mice are active, creating tunnels under the snow.

Battle Bush Honeysuckle

If your plan to rake leaves has been circumvented (see *Give Your Rake a Break*) and now you have pent-up yard work energy, turn it toward battling bush honeysuckle. After most of the fall color is gone, you may see some green remaining in the forest understory. Exotic invasive bush honeysuckle will remain green well into December, making it easy to spot. Bush honeysuckle stays green after most plants have gone dormant, and in spring greens up before other species leaf out, and then grows so aggressively, outcompeting our native wildflowers and other plants, preventing regeneration of our forests. Get out and help control this problematic shrub. Find out how by visiting short.mdc.mo.gov/ZCi.

Get the Feeders Ready

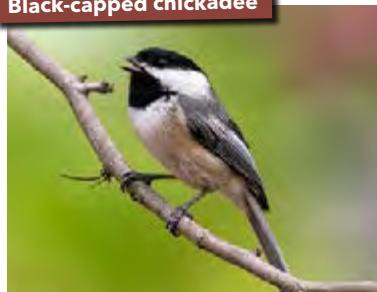
As cold weather sets in and natural food sources dwindle, backyard birds will be seeking food. It's time to put up bird-feeding stations. Common winter backyard birds to look for, to name just a few, include:

- American goldfinch
- Black-capped chickadee
- Carolina chickadee
- Dark-eyed junco
- Blue jay

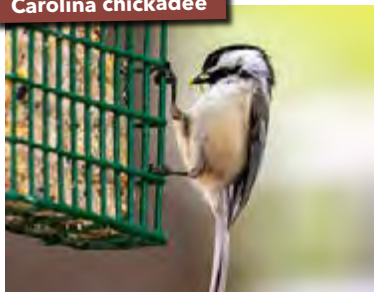
American goldfinch



Black-capped chickadee



Carolina chickadee



Dark-eyed junco



Blue jay

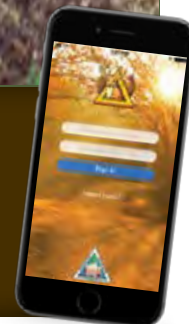


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Places to Go

CENTRAL REGION

Prairie Home Conservation Area

Of bucks and bikes

by Larry Archer

✕ As are many conservation areas in November, Prairie Home Conservation Area (CA) is a destination for hunters looking to bag a big buck, but it's also a place where the rubber meets the trail for off-road bicyclists.

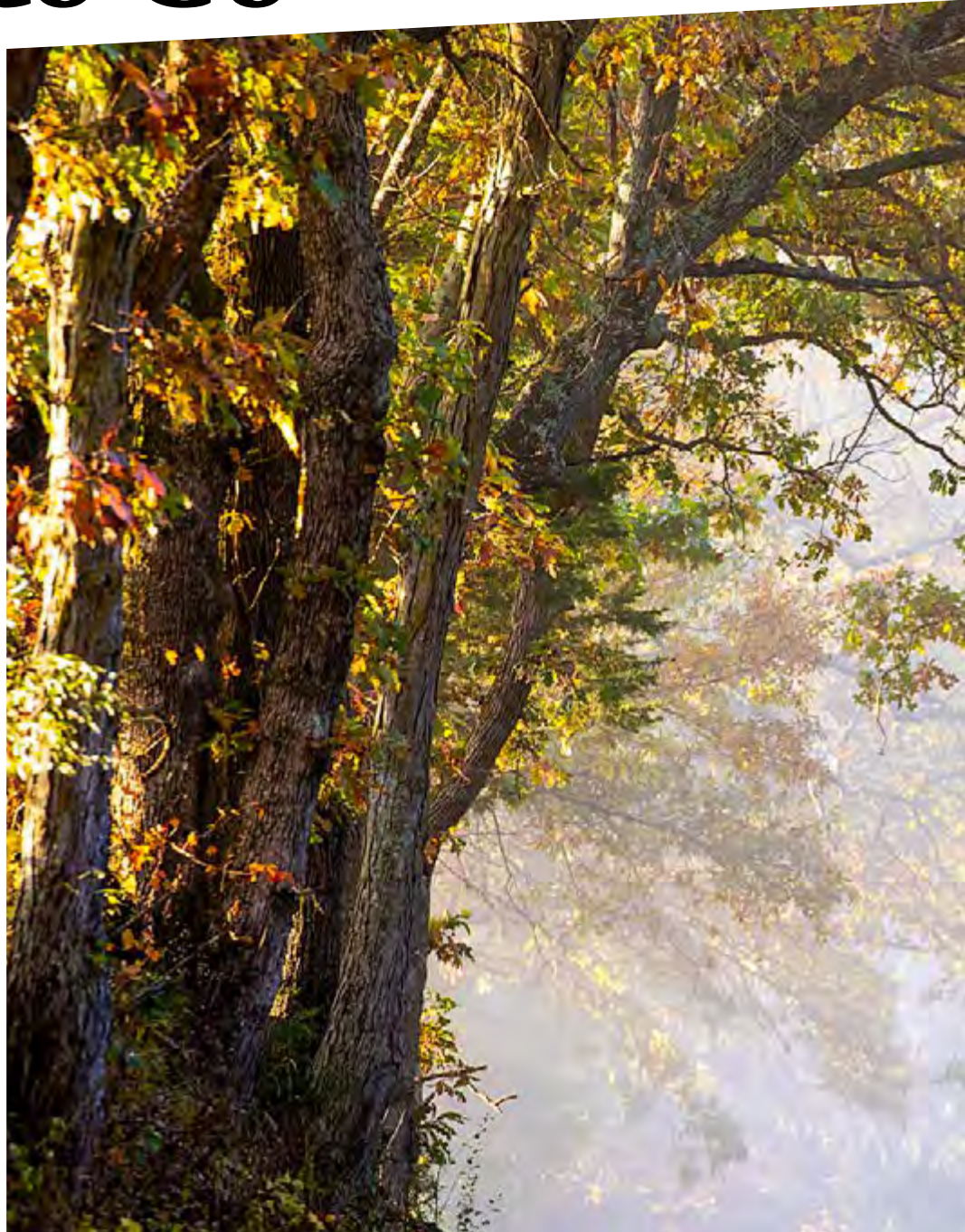
With slightly more than 1,460 acres in Cooper and Moniteau counties in central Missouri, Prairie Home CA also draws anglers to its three fishing ponds and rabbit hunters to its mixed fields, said Wildlife Biologist Travis Henry.

While its upland fields and woods attract the hunters, its nearly 6 miles of multiuse trail challenges both horseback and bicycle riders, Henry said.

"We cleaned up the old horse trail and turned it into a multi-use trail for bicycles," he said. "It's going to be a very primitive trail. You're going to have a couple of little creek crossings in it. And that was designed for the off-road enthusiast."

"It's not going to be like out walking on one of our mowed field trails," he said. "It's going to be a rough trail. You're going to sweat doing it."

Because of the area's irregular shape — think of a lopsided, inverted horseshoe with private property in the center — Henry suggests paying extra attention to boundary signs, as not all the area is fenced.



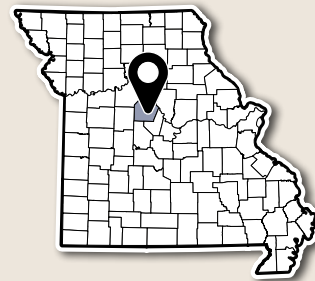
"At the northwest corner, you've got Johnson Lake, with handicap accessibility, three fishing jetties, and a privy. That pond is probably the most used of the three ponds."

—Wildlife Biologist
Travis Henry

NORRADOI PAOTHONG



The main access road at Prairie Home Conservation Area is just one of several routes open to hikers and cyclists. (Inset) The sun reflects off one of Prairie Home CA's smaller ponds.



PRAIRIE HOME CONSERVATION AREA







consists of 1,460.8 acres in Cooper and Moniteau counties. From Prairie Home, take Route J west 0.5 miles, then Route W south 2 miles to the area.

38.7826, -92.6049

short.mdc.mo.gov/4qS

573-815-7900

WHAT TO DO WHEN YOU VISIT

-  **Biking** 5.9 miles of multiuse trails and 3.3 miles of service roads open to year-round biking.
-  **Birdwatching** Included in the Great Missouri Birding Trail (short.mdc.mo.gov/4qT). The eBird list of birds recorded at Prairie Home CA is available at short.mdc.mo.gov/4Sm.
-  **Camping** Five designated camping sites.
-  **Fishing** Three fishing lakes; black bass, catfish, and sunfish.
-  **Hiking** Approximately 6 miles of multiuse trails and 3.3 miles of field access trails.
-  **Hunting Deer and turkey** Regulations are subject to annual changes. Refer to MDC's regulation page online at short.mdc.mo.gov/4Sm.
Also **quail, rabbit, and squirrel**

WHAT TO LOOK FOR WHEN YOU VISIT



Virginia opossum



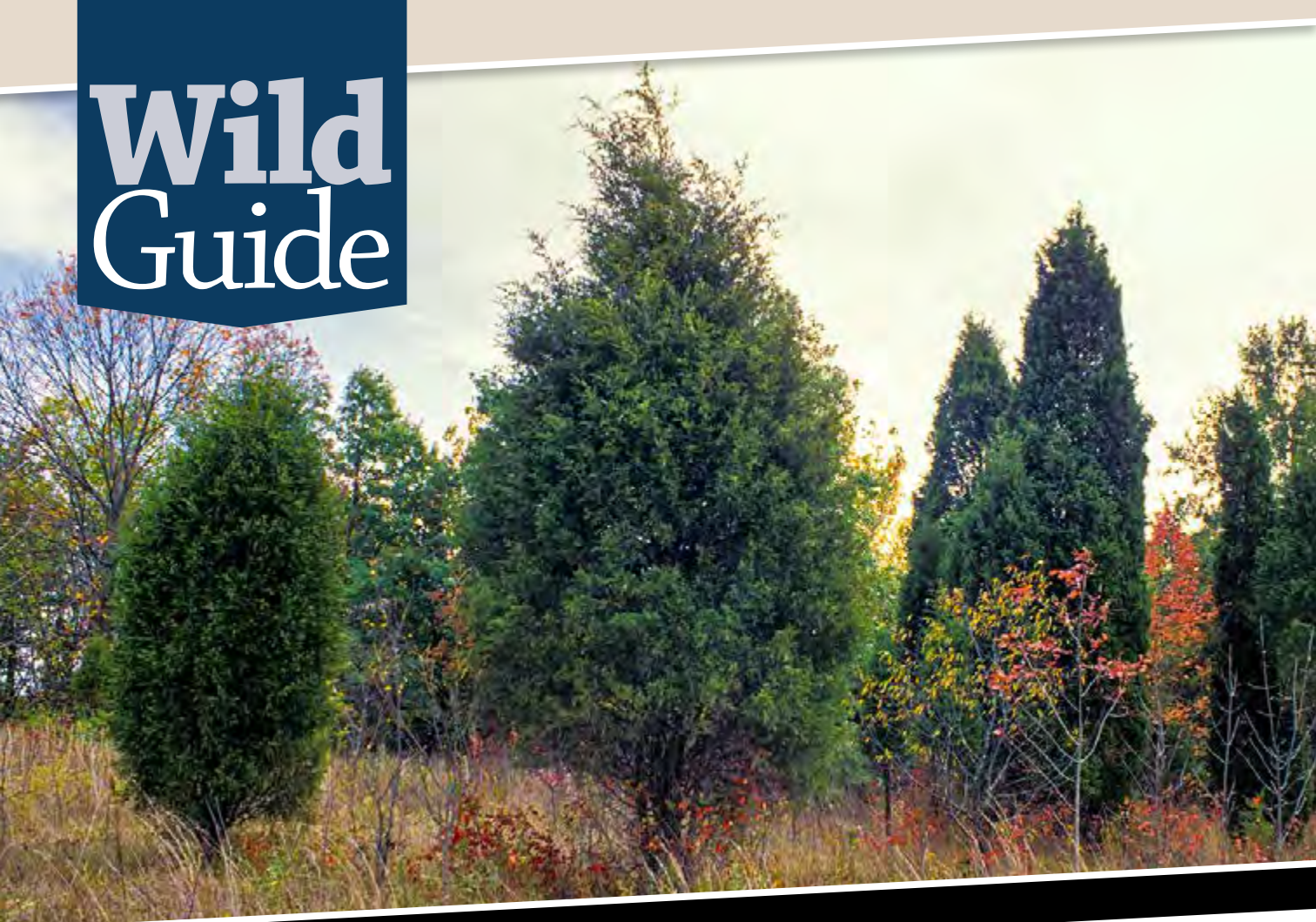
Northern harrier



Pied-billed grebe



Cedar waxwing



Eastern Red Cedar

Juniperus virginiana

Status
Common

Size
Height: to 50 feet

Distribution
Statewide

Eastern red cedar is a small to medium-sized tree, aromatic, evergreen, with a dense, pyramidal (sometimes cylindrical) crown that occurs on glades and bluffs; in open, rocky woods, pastures, and old fields; and along roadsides and fencerows. Some gnarled cedars on Ozark bluffs are over 1,000 years old. The fleshy, berrylike, globe-shaped fruits are dark blue with a white, waxy coating that appear from August to September.



Did You Know?

This tree is not technically a cedar, which is why many specialists prefer to spell "redcedar" without a letter space or else hyphenate it. "Juniper" is a better name for this plant, as it is in the genus *Juniperus*, in the cypress family.

Although many Missourians today purchase pines and spruces from Christmas tree farms, red cedar was the traditional favorite in many homes. And for many, it still is.



HUMAN CONNECTIONS

The tree has been cultivated since 1664, and old specimens are prominent in many old cemeteries, farmyards, and neighborhoods. The red, aromatic wood is used for chests, closets, interior finish, posts, pencils, and other objects. An oil from the resin is used for ointments, soaps, and to flavor gin.



ECOSYSTEM CONNECTIONS

The fruit is eaten by many species of birds and mammals. Cedar waxwings are named for their preference for the fruits. Seeds that have traveled through the digestive tract of waxwings and other birds have a higher germination rate than those that have not. In addition, the thick crowns of cedars provide nesting and roosting cover for many birds.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

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MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

FISHING

Black Bass

Impounded waters and non-Ozark streams:
Open all year

Most streams south of the Missouri River:

- ▶ Catch-and-Keep:
May 28, 2022–Feb. 28, 2023

Nongame Fish Giggling

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2022–Feb. 15, 2023

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2022

Trout Parks

During the catch-and-release season,
state trout parks (except Maramec Spring
Park) are open only Friday–Monday.

Catch-and-Release:
Nov. 11, 2022–Feb. 13, 2023

TRAPPING

Badger, Gray Fox, Red Fox

Nov. 15, 2022–Jan. 31, 2023

Beaver, Nutria

Nov. 15, 2022–March 31, 2023

Other Furbearers

Nov. 15, 2022–Feb. 28, 2023

Rabbits

Nov. 15, 2022–Jan. 31, 2023

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available from local permit vendors or online at short.mdc.mo.gov/ZZf.

HUNTING

Badger, Gray Fox, Red Fox

Nov. 15, 2022–Jan. 31, 2023

Bobcat, Opossum, Raccoon, Striped Skunk

Nov. 15, 2022–Feb. 28, 2023

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2022–March 3, 2023

Deer

Archery:

Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Firearms:

- ▶ November Portion:
Nov. 12–22, 2022
- ▶ Late Youth Portion (ages 6–15):
Nov. 25–27, 2022
- ▶ Antlerless Portion (open areas only):
Dec. 3–11, 2022
- ▶ Alternative Methods Portion:
Dec. 24, 2022–Jan. 3, 2023

Dove

Sept. 1–Nov. 29, 2022

Elk

Only hunters selected through a random drawing may participate in this hunting season.

Firearms:

Dec. 10–18, 2022

Groundhog (Woodchuck)

May 9–Dec. 15, 2022

Pheasant

Regular:

Nov. 1, 2022–Jan. 15, 2023

Quail

Regular:

Nov. 1, 2022–Jan. 15, 2023

Rabbit

Oct. 1, 2022–Feb. 15, 2023

Sora, Virginia Rails

Sept. 1–Nov. 9, 2022

Squirrel

May 28, 2022–Feb. 15, 2023

Turkey

Archery:

Sept. 15–Nov. 11, 2022
Nov. 23, 2022–Jan. 15, 2023

Waterfowl

See the Migratory Bird and Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2022

Woodcock

Oct. 15–Nov. 28, 2022

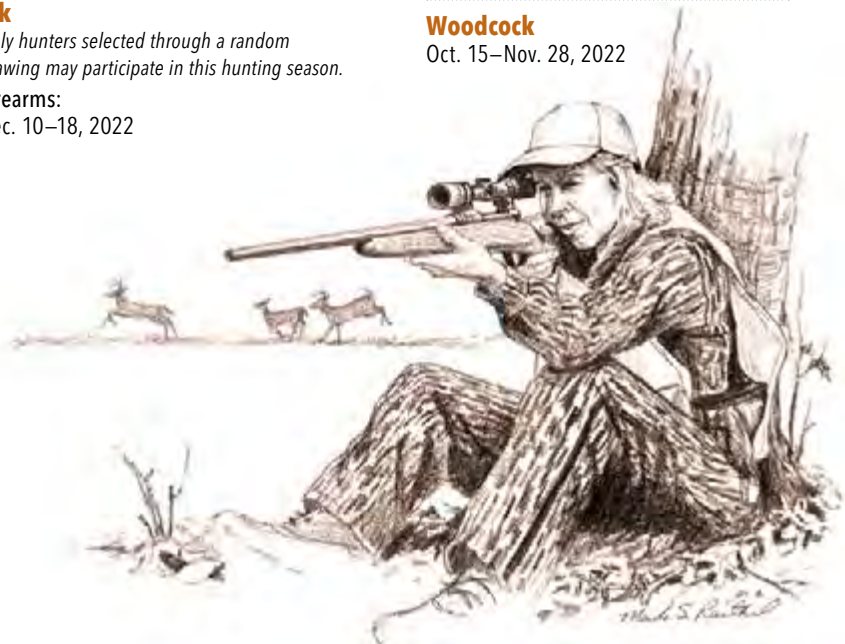


ILLUSTRATION: MARK RATHIEL



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Missouri outdoors during the fall season is bountiful. From beautiful fall leaves for nature viewers to majestic deer for hunters, there is something for everyone. What will you find the next time you discover nature?

📷 by **Noppadol Paothong**

Free to Missouri households

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